

Application No. 10/725,578
Reply to the Office action of 04/11/2005

Amendments to the Drawings:

The attached drawing sheet 1/3 comprises replacement Fig. 1. This sheet, which includes only Fig. 1, replaces the original sheet including Fig. 1. The gas turbine engine depicted in new Fig. 1 is of the reverse-flow combustion type, in accordance with Figs. 2-3.

Attached replacement sheets 2/3 and 3/3, respectively comprising formal drawings of Fig. 2 and Fig. 3 replace the corresponding original sheets of informal drawings.

Attachment: Replacement Sheets

Application No. 10/725,578
Reply to the Office action of 04/11/2005

REMARKS/ARGUMENTS

Drawings

Fig. 1 was objected to because the combustor shown was of the "flow-through" type, while the combustor depicted in Fig. 3 is of the "reverse-flow" type. Accordingly, the gas turbine engine shown in replacement Fig. 1 now depicts a reverse-flow combustor in accordance with Fig. 3. Withdrawal of the objection raised to Fig. 1 is therefore anticipated.

Formal drawings sheets 2/3 and 3/3, respectively comprising Fig. 2 and Fig. 3, are also enclosed herewith to replace the informal drawings originally filed.

Specification

Claim 15 was objected to because the term "exits" in line 4 thereof was identified as being a typographical error. Accordingly, the term "exits" in line 4 of claim 15 has been replaced by "exists", as suggested by the Examiner. Withdrawal of the objection is therefore anticipated.

Claim Rejections – 35 USC 102/103

Claim 1-20 were rejected under 35 USC 102(b) as being allegedly anticipated by Bobo (US 3,302,926). With respect, the Applicant believes that Bobo fails to teach or suggest the subject matter of the present invention as claimed for at least the following reasons. Bobo discloses a segmented, annular nozzle diaphragm, wherein individual segment 25 (see Fig. 3) include several vanes which extend between outer and inner arcuate shroud members 26 and 27 respectively. However, nothing expressly taught by Bobo discloses that either of the shroud members 26,27 forms any type of sliding joint connection with the walls of the liner 18 of the upstream combustor. Although Fig. 1 depicts merely that projecting upstream portions of the shroud members 26,27 appear to mate with slots defined in the combustor liner 18, nothing is disclosed with respect to this joint between the vane shroud members and the combustor liner which would suggest relative movement therebetween in any direction is possible. The mating elements forming the joint could in fact be rigidly fixed, such as by a weld, fastener or the like. No teachings to the contrary are provided by Bobo. Therefore, the mere fact that Fig. 1 depicts a mating joint between the vane shroud members and the combustor liner is insufficient to teach all aspects of the present invention as claimed. Further, Bobo fails to provide any teachings of thermal expansion of the joint elements in either an axial or radial direction, as suggested by the Examiner. The thermal expansion to which Bobo makes reference in column 4, lines 1-23, relates solely to

Application No. 10/725,578
Reply to the Office action of 04/11/2005

circumferential thermal expansion. Particularly, Bobo indicates that "the radii R1 and R2 and the clearance C are chosen such that the shroud members 26 and 27 of the shroud segments 25 will expand into abutting relationship at the normal operating temperature"(col. 4, lines 4-8), thus circumferentially expanding in order to close the clearance gaps C (see Fig. 2) such that the outer and inner shrouds 26,27 of one segment 25 circumferentially abut those of the next adjacent segment 25.

Applicant therefore believes with respect that Bobo fails to teach or suggest all aspects of the present invention as claimed, and that as such the rejection of claims 1-20 as being anticipated by Bobo should be withdrawn.

The Examiner also indicated that Johnson (US 3,286,461) could also be used to reject the claimed invention under 35 USC 102/103 and that Wood (US 4,195,476) could be used to reject the claimed invention under 35 USC 103(a).

Johnson teaches a turbine which includes an annular nozzle 26 having an outer shroud ring 27 and an inner shroud ring 28 between which extend vanes 29. Upstream of the nozzle 26 is disposed an annular combustion liner defined by an outer wall 34 and an inner wall 35. The outer wall 34 and the inner wall 35 of the combustion liner are said to have a "tongue-and-groove fit with the forward edges of the nozzle shrouds 27 and 28, respectively".(column 1, lines 66-69) No further explanation with respect to this joint is provided by Johnson. Accordingly, although such a tongue-and-groove joint may potentially allow for relative axial displacement, nothing further taught or suggested by Johnson discloses the sliding joint as presently claimed. In addition, nothing disclosed by Johnson teaches or suggests, among other things, radial displacement between joint elements or radial expansion therebetween to provide sealing, relative thermal growth differential between joint elements, or expansion of the vane platforms away from one another during operation. Reconsideration of the rejection under 35 USC 102/103 in view of Johnson is respectfully requested.

Similarly, Wood (US 4,195,476) fails to teach the presently claimed sliding joint between at least the outer platform of the vane assembly and an adjacent combustor wall. Wood discloses, much as does Johnson, a tongue-and-groove type joint between the lips 32,93 of the combustor walls and corresponding flanges 98,100 of the downstream turbine nozzle ring 74. Accordingly, Wood discloses that "thermal growth of the combustor 22 during gas turbine engine operation will cause the lips 32,93 to shift axially within slots 94,96 formed in inner and outer flanges 98,100 of the turbine nozzle ring 74".(col. 3, lines 33-37) Therefore, although Wood does teach that relative axial movement between the nozzle ring and the combustor walls is permitted, nothing further taught or suggested by Wood discloses the sliding joint as

Application No. 10/725,578
Reply to the Office action of 04/11/2005

presently claimed. In addition, nothing disclosed by Wood teaches or suggests, among other things, radial displacement between joint elements or radial expansion therebetween to provide sealing, relative thermal growth differential between joint elements, or expansion of the vane platforms away from one another during operation. Reconsideration of the rejection under 35 USC 103(a) in view of Wood is respectfully requested.


In view of the above and the claims as presently submitted, Applicant submits that claims 1-20 are neither taught nor suggested by the cited prior art, and reconsideration of their rejection is thus respectfully requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully,

July 11, 2005

Date


Agent of the Applicant

T. James Reid, Reg. No. 56,498

Customer Number: 032292

OGILVY RENAULT LLP

1981 McGill College, Suite 1600

Montreal, Quebec, Canada H3A 2Y3

Tel.: (514) 847-4311

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office on the date shown below.

T. James Reid, Reg. No. 56,498

Name of person signing certification


Signature

July 11, 2005

Date